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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHAWAN, SHEELA C	
ART UNIT	**PAPER NUMBER**
2625	12

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/262,778	PENBERTH ET AL.	
	Examiner	Art Unit	
	Sheela C Chawan	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☒ Claim(s) *5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 4, lines 15-19 filed on Oct 24, 2003 (paper # 11), with respect to the rejection (s) of claim(s) 1-5 under 103(a) rejection have been fully considered and are persuasive .Therefore, the rejection has been withdrawn . However, upon further consideration, a new ground(s) of rejection is made in view of IBM Technical Disclosure Bulletin , Nov 1982, TDB-ACC-NO: NN82112718 .

Claim Rejections - 35 U.S.C. § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3 and 4, are rejected under 35 U.S.C. 103(a) as being unpatentable over of IBM Technical Disclosure Bulletin , in view of Prior (US. 5,345,085).

As per claims 1 and 4, IBM Technical Disclosure Bulletin discloses charged particle beam pattern generation apparatus and method for determining the position of a feature (calibrating grid array which is an array of square holes in a gold film over a silicon wafer, as shown in fig 1) within the scan (raster scanning) that is effective at the operating frequency of the scan and using a limited bandwidth video signal, comprising the steps of (fig 1, page 1, see second paragraph):

determining the reference feature (fig 1, see second paragraph) to be an edge over which the video signal changes abruptly from one level to a higher or lower level (fig 1, page 1, see paragraph 4);

determining whether the beam is only turned on over a short region of the scan (the E-beam is unblanked only over the grid holes , fig 1, see paragraph 4).

IBM Technical Disclosure Bulletin discloses a Technique of Characterizing Calibration Grids in E-Beam in that he does not clearly discloses a overlap between the beam on portion of the scan ... .

Prior discloses a method and structure for electronically measuring beam parameters specifically mention overlap between the beam on portion of the scan ... . The system comprises of :

representing the degree of overlap (fig 11A) between the beam on portion of the scan and the higher video level part of the feature as the total video signal accumulated in that scan (abstract, column 8, lines 49- 68). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified TDB to include a degree of overlap between the beam on portion of the scan and the higher video level part of the feature as the total video signal accumulated in that scan . It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified TDB by the teaching of Prior in order to measure beam deflection errors and beam distortion (as suggested by Prior at column 1, lines 8- 12).

3. As per claim 3,TDB discloses a Technique of Characterizing Calibration Grids in E-Beam , wherein electronically measuring parameters of a beam in a raster scan system comprising the steps of : (a) choosing a predetermined plurality of pixels of said raster scan to be calibrated (page 1, see paragraph 3)

(b) moving at least one feature at the image plane having video contrast adjacent to the landing point of said plurality of pixels (fig 1, page 2, paragraph 2).TDB is silent about specifics details of c) strobing said beam for said plurality of pixels within said raster scan. (d) incrementally moving said plurality of pixels within said raster scan toward said at least one video contrast feature ; (e) integrating the signal resulting from said plurality of pixels as said plurality of pixels move towards said at least one video contrast feature; and (f) repeating

steps (c) through (e) until said plurality of pixels crosses said at least one video contrast feature . However, Prior discloses a method of electronically measuring parameters of a beam in a raster scan system comprising the steps of:

(c)strobing said beam for said plurality of pixels within said raster scan (column 2 , lines 26- 39);

(d) incrementally moving said plurality of pixels within said raster scan toward said at least one video contrast feature (abstract, column 2, lines 27- 39, column 3, lines 1- 15) ;

(e)integrating (column 9, lines 3- 65) the signal resulting from said plurality of pixels as said plurality of pixels move towards said at least one video contrast feature (abstract, column 3, lines 1 - 15, column 6, lines 35- 68) ; and

(f) repeating steps (c) through (e) until said plurality of pixels crosses said at least one video contrast feature (column 5 , lines 8-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified TDB to include strobing said beam for said plurality of pixels within said raster scan. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified TDB by the teaching of Prior in order to minimize the time required to completely expose a pattern . In this manner the production rate is increased and the unit cost per mask or wafer is lowered (as suggested by Prior at column 1, lines 40- 44).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over of IBM Technical Disclosure Bulletin , Nov 1982, TDB-ACC-NO: NN82112718, in view of Adler et al. (US. 6,087,659).

As per claim 2, TDB discloses a method for determine the position of a feature within the scan that is effective at the operating frequency of the scan and using a limited bandwidth video signal, comprising the steps of :

using a sample having a black to white video transition as a reference feature (see page 1, see paragraph 3 and 4, fig 1, shows event of signals being positive and negative transition are considered to be black and white video transition) ;

unblanking the electron beam for a short period during the scan (page 1, see paragraph 4) ;

advancing the unblank-blanked period along the line by a small increment each succeeding scan (fig 2 and 3 , see paragraph 3 calibrating the grid holes by E-beam) ;

sampling the video amplifier output the unblank-blanked period determined by the video amplifier bandwidth (fig 1 and 2, see page 1, paragraph 3 and 4) ;

mathematically processing the representative video profile to yield the position of the video edge with respect to the scan (fig 2,3 and 4, see page 2 and 3) .

TDB is silent about specific details of using an analog-to-digital converter at a time delay ;

arranging the successive sample for giving a video profile representative of the video profile of a slow scan with a wide beam; and

Adler discloses apparatus and method for secondary electron emission microscope. The system comprises of:

output using an analog-to-digital converter at a time delay (abstract, column 2, lines 64- 67, column 4, lines 29- 37) ;

arranging the successive sample for giving a video profile representative of the video profile of a slow scan with a wide beam (column 1, lines 48-62, column 2, lines 7-11, column 3, lines 25- 27, column 5, lines 41- 51, column 6, lines 16- 26). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified TDB to include an output using an analog-to-digital converter at a time delay . It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified TDB by the teaching of Adler in order to convert electron beam into a light beam (as suggested by Adler at column 4, lines 40- 44).

Allowable Subject Matter

5. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is 703-305- 4876. The examiner can normally be reached on Monday through Thursday 7.30 a.m. to 6.00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached on (703) 308 - 5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3800.

Sheela Chawan
Patent Examiner
Group Art Unit 2625
Jan 7, 2004

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